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July 6, 1981

Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
Region I
US Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

SUBJECT: LICENSEE EVENT REPORT NARRATIVE DESCRIPTION

Dear Mr. Grier:

The following occurrence was reported to Mr. Knapp, Region I, Office of Inspection and Enforcement on June 22, 1981.

Reference: Docket No. 50-277
Report No.: 2-81-35/1T-0
Report Date: July 6, 1981
Occurrence Date: June 22, 1981
Facility: Peach Bottom Atomic Power Station
RD #1, Delta, PA 17314

Technical Specification Reference:

Technical specification 3.8.C.1 states that, "The release rate of gross activity except for halogens and particulates with half lives longer than eight days shall not exceed:

$$\frac{Q_s \bar{E}}{0.24} + \sum \frac{Q_{iv}}{2.0 \times 10^5} MPC_i \leq 1$$

Where:

Qs = combined units 2 and 3 off gas stack release rate in Ci/sec.

\bar{E} = average γ energy of release in Mev.

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Q_{iv} = combined units 2 and 3 release rate in Ci/sec from reactor building ventilation exhaust stack.

MPC_i = as defined for radionuclide i in column 1, Table II of Appendix B 10 CFR 20 assuming a 10 minute old off gas mixture."

Description of the Event:

On 6/21/81 the recombiner mechanical compressors tripped due to high hydrogen gas levels downstream of the recombiner. This resulted in the recombiner mechanical compressor suction header pressure increasing to a positive level. When this happened, a release occurred through the Unit 3 reactor building vent, with activity levels within Tech. Spec. limits.

On 6/22/81, as previously reported in the Prompt Notification of this event, a second release occurred shortly after Unit 2 had shutdown automatically due to loss of a plant load bus. The plant load bus which was lost also caused the trip of a recombiner mechanical compressor resulting in the compressor suction line pressure again increasing to a positive value, and this again caused leakage to occur which resulted in a release which exceeded Tech. Spec. limits.

The Unit 3 roof vent monitor spiked for a seven minute period at 0930 AM on 6/22/81, releasing 12 mCi/sec. peak (6.6 mCi/sec. average) for a total release of 2.8 curies during the peak period (182% of Tech Spec limit). The peak tailed off above background for three hours releasing 0.760 mCi/sec. average for a total release of 8.6 curies over the tailing off period. The total release over the entire period is calculated to be 11.4 curies. Four additional releases well within Tech. Spec. limits, occurred between 6/22/81 and 6/29/81 with a total calculated additional release of 3.0 curies.

Analysis of roof vent iodine and particulate samples indicates no increase in the release rate during any of the gaseous activity spikes.

Probable Consequences of the Occurrence

All of the releases identified above were of short duration. The maximum dose at the site boundary was .08 mR on 6/22/81 and the total offsite dose for all releases during this period is calculated to be approximately .14 mR.

Cause of the Event

On 6/21/81, the recombiner mechanical compressors tripped, allowing the compressor suction line pressure to increase to a positive level. A release occurred with an instantaneous peak 45% of Tech. Spec. limits and total activity released of 6.65 Ci. Initially, the sole cause of this occurrence was thought to be a leaking 2B recombiner mechanical compressor suction line snubber drain valve. Pending repairs to the valve, suction pressure was controlled negative. However, before repairs could be made, on 6/22/81 the compressors tripped off again, and the release in excess of Tech. Spec. limits as described in "Detailed Description of Event" occurred. Subsequent to removal of the leaking valve and capping of the line, several more losses of recombiner system negative pressure resulted in releases well within Tech. Spec. limits. The dates of the releases and activity released are:

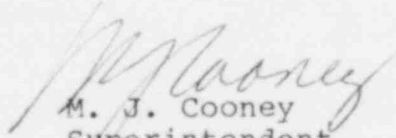
Release 1	6/23/81	Instantaneous Peak - 1.4% Tech Spec limit Total Calculated Release - 0.09 Ci
Release 2	6/23/81	Instantaneous Peak - 4.7% Tech Spec limit Total Calculated Release - 1.63 Ci
Release 3	6/28/81	Instantaneous Peak - 4.5% Tech Spec limit Total Calculated Release - 0.6 Ci
Release 4	6/29/81	Instantaneous Peak - 6.4% Tech Spec limit Total Calculated Release - 0.68 Ci

Investigation identified two other leakage paths; through a mechanical compressor common suction line loop seal isolation valve, and through a condenser conductivity element drain valve.

Corrective Actions

On 6/22/81 the line associated with the leaking 2B mechanical compressor suction valve was cut upstream of the valve, and a pipe cap installed to preclude further leakage. This was accomplished as a modification, as the line is used for maintenance purposes only. Following trip of the recombiner mechanical compressors on 6/23/81 (Releases 1 and 2) a normally closed mechanical compressor common suction line loop seal isolation valve was found cracked open. (The loop seal was drained, since several other system drains had been added to the system after initial installation and this loop seal drain was no longer required). This valve is in a location where it could be used as a foothold and may have been accidentally cracked open by someone trying to gain access to other equipment in the area. The valve was wired closed. On 6/28/81 release 3 occurred. A hydrogen analyzer valve gas inlet valve was found cracked open, and at the time it was thought that this could have provided a further release path for radioactive gases. Upon closer examination it was determined that any gases passing through the valve would have gone to the main condenser. On 6/29/81, again following loss of recombiner system negative pressure, release 4 occurred. Recombiner equipment drain sump airborne activity levels were found to be abnormally high, and it was determined that the recombiner condenser conductivity element drain valve which drains to this sump was cracked open approximately one quarter turn. The valve was closed. Subsequent losses of recombiner negative pressure on 6/29/81 and 7/1/81 resulted in no appreciable increase in Unit 3 reactor building vent activity levels.

Very truly yours,



M. J. Cooney
Superintendent
Generation Division/Nuclear

cc: Director, NRC - Office of Inspection and Enforcement
Mr. Norman M. Haller, NRC - Office of Management &
Program Analysis